ABSTRACT

A control device (30) receives a power supply current (Ib) from a current sensor (11) and a reactor current (IL) from a current sensor (18) and detects a maximum value (ILmax) and a minimum value (ILmin) from the reactor current (IL) and from the detected maximum and minimum values (ILmax and ILmin) and the power supply current (Ib) determines whether the reactor current (IL) traverses the zero point, and if so the control device (30) generates and outputs a signal (PWMS) to an up converter (12) which responds to the signal (PWMS) by stopping switching to perform an up or down converting operation.